Response Under 37 CFR 1.116
Expedited Procedure
Examining Group 2836

Claims 1-20 (Cancelled)

21. (Currently Amended) An apparatus (1, 1', 1'') for connecting modules (2, 2', 2'') ~~connected~~ to a supply voltage in series in a control and data transmission installation, comprising:

~~only one~~ a supply voltage input (E, E', E'') and an associated supply voltage output (A, A', A''),

a connecting device (3, 3', 3'') for connecting the supply voltage input in series to the supply voltage output in response to an ascertaining device (4, 4', 4'') for ascertaining at least one electrical variable at the supply voltage output, and whereby said apparatus has at least one memory device for configuration storage,

wherein the apparatus (1, 1', 1'') is arranged to detect a flowing supply current, and whereby the ascertaining device comprises a device for detecting the electrical load at the supply voltage output, and means for applying a low voltage below 24 volts with current limiting to the supply voltage output, whereby said device for detecting the electrical load at the supply voltage output ascertains the flow of current resultant from applying said low voltage to the supply voltage output, and whereby the connecting device connects the supply voltage input in series to the supply voltage output if said ascertaining device does not detect an overload in response to the flow of current resultant from applying said low voltage by comparison with a prescribed limit value of the electrical load stored in said memory device.

22. (Previously Presented) The apparatus as claimed in claim 21, wherein the apparatus is arranged for use with a bus in an automation bus system.

23. (Previously Presented) The apparatus (1, 1', 1'') as claimed in claim 21, wherein the ascertaining device (4, 4', 4'') is arranged to ascertain at least one electrical variable for detecting at least one of an electrical load and a short circuit.

24. (Cancelled)

25. (Previously Presented) The apparatus as claimed in claim 21, wherein the connecting device (3, 3', 3'') comprises at least one of a relay, a contactor and a semiconductor switch.

26. (Previously Presented) The apparatus as claimed in claim 22, wherein the apparatus (1, 1', 1') comprises a bus connection device for connection to an automation bus system.

27. (Cancelled)

28. (Previously Presented) The apparatus as claimed in claim 21, wherein the apparatus has separate and electrically independent supply voltage inputs and outputs for logic and for actuator equipment/sensor equipment of an associated module.

29. (Previously Presented) The apparatus as claimed in claim 21, wherein the apparatus (1, 1', 1'') comprises an associated module (2, 2', 2'') in a control and data transmission installation for a bus user in an automation bus system.

30. (Previously Presented) The apparatus as claimed in claim 29, wherein the associated module (2, 2', 2'') is connected to the supply voltage essentially downstream of the connecting device (3, 3', 3'').

31. (Previously Presented) The apparatus as claimed in claim 21, wherein the apparatus is arranged to detect a ground fault.

32. (Currently Amended) A control and data transmission installation, comprising at least one apparatus (1, 1', 1'') for connecting modules (2, 2', 2'') to a supply voltage in series in said control and data transmission installation, and

comprising at least one associated first module (2, 2', 2'') that is electrically connected to the supply voltage in series with at least one ~~other~~ second module, the apparatus being connected

upstream of the ~~other~~ second module, said apparatus (1, 1', 1") for connecting said modules comprising:

a supply voltage input (E, E', E") connected to said first module and

an associated supply voltage output (A, A', A") connected to said second module, and

a connecting device (3, 3', 3") for connecting the supply voltage input in series to the supply voltage output in response to an ascertaining device (4, 4', 4") for ascertaining at least one electrical variable at the supply voltage output, and

at least one memory device for configuration storage, wherein the apparatus is arranged to detect a flowing supply current through said at least one second module,

and whereby the ascertaining device comprises a device for detecting the electrical load at the supply voltage output, and means for applying a low voltage below 24 volts with current limiting to the supply voltage output, whereby said device for detecting the electrical load at the supply voltage output ascertains the flow of current resultant from applying said low voltage to the supply voltage output, and whereby the connecting device connects the supply voltage input in series to the supply voltage input in series to the supply voltage output if said ascertaining device does not detect an overload in response to the flow of current resultant from applying said low voltage and comparison of the flow of current with a prescribed limit value of the electrical load stored in said memory device.

33. (Previously Presented) A control and data transmission installation as claimed in claim 32, comprising a serial automation bus.

34. (Previously Presented) The control and data transmission installation as claimed in claim 33, wherein the automation bus comprises a bus in accordance with EN 50254, and at least a first

module (2) of the modules (2, 2', 2'') connected to the supply voltage in series comprises an associated apparatus in a local bus section or bus spur.

35. (Currently Amended) A method for connecting and operating ~~an apparatus~~ a bus user, comprising the following steps:

a) storing a prescribed limit value of the electrical load stored in a memory device,

[[a)]] b) applying a supply voltage to the supply voltage input of the apparatus (1, 1', 1''),

[[b)]] c) detecting an electrical load or a short circuit at the supply voltage output (A, A', A''), whereby

d) a low, current limited voltage is applied to a bus user connected to said supply voltage output, whereby the low voltage is below the voltage required by the bus user so that the bus user remains disconnected upon applying the low voltage, and whereby

e) the flow of current resultant from applying said low voltage is ascertained, and whereby it is

f) detected from the ascertained flow of current whether there is an overload on account of a fault of the subsequent bus user or a short circuit by comparing the flow of current with the prescribed limit value of the electrical load stored in said memory device,

[[c)]] g) controlling the connecting device (3, 3',3'') for connecting the supply voltage input (E, E', E'') to the associated supply voltage output (A, A', A'') in response to a detected electrical load or short circuit, whereby the supply voltage output is not connected if an overload on account of a fault of the subsequent bus user or a short circuit has been detected.

36. (Previously Presented) The method as claimed in claim 35, wherein the controlling step c) comprises the following steps:

c1) comparing the detected load with a predetermined value, and

c2) connecting the supply voltage input (E, E', E'') to the associated supply voltage output (A, A', A'') if the detected load does not exceed the predetermined value.

37. (Previously Presented) The method as claimed in claim 35, wherein the controlling method step c) comprises the following step:

connecting the supply voltage input (E, E', E'') to the associated supply voltage output (A, A', A'') if no short circuit has been detected.

38. (Currently Amended) The method for connecting and operating ~~an apparatus~~ a bus user as claimed in claim 35, comprising the following additional steps:

detecting a flowing supply current, and

breaking the connection between the supply voltage input (E, E', E'') and the associated supply voltage output (A, A'; A'') if the detected supply current exceeds a predetermined value.

39. (Currently Amended) A method for connecting and operating series-connected ~~apparatuses~~ bus users in a control and data transmission installation, comprising starting with connecting a first ~~apparatus (1),~~ bus user using the method as claimed in claim 35, and subsequently ~~successfully~~ connecting further ~~the~~ bus users ~~apparatuses (1', 1', 1'') in each case~~ using the method as claimed in claim 35.

40. (Currently Amended) The method as claimed in claim 39, wherein the connection takes place automatically or is controlled via ~~the~~ an automation bus.

41. (Currently Amended) The method as claimed in claim 39, wherein ~~an apparatus (1, 1', 1'')~~ a bus user connected only partially outputs an error message to indicate a short circuit or an overload at its voltage supply output, the error message being output to an indicator device or via the automation bus in order to control the automation bus system.

42. (Previously Presented) The method as claimed in claim 41, wherein the error message output via the automation bus comprises at least one data item for identifying the apparatus (1, 1', 1'') connected only partially.